Welcome to the eighth annual course which provides basic introductory and comprehensive information on performing metabolic studies using tracers labeled with radioactive or stable isotopes, in humans and in animals. The course is designed for beginners as well as those with experience who wish to expand their capabilities to more sophisticated problems. The faculty is well-versed in a variety of applications and methodologies.

Techniques will be presented for investigating whole body metabolism, for metabolite balance across organs, intracellular flux rates and pathway regulation. The basic aspects of modeling will be considered, as well as specific applications to the study of carbohydrate, fat, protein metabolism and energy balance. Theoretical and practical matters related to sample analysis by mass spectrometry and NMR will be discussed, including detailed numerical examples of calculations involved in determining isotopic enrichment and basic kinetic parameters. Advanced lectures will discuss in more detail the use of positional and mass isotopomer analysis for intracellular flux rates and various aspects of protein and amino acid metabolism. Applications in humans and animal models (particularly mouse) will be considered.

Course material will be available for download from [www.mmpc.org/shared/tracers.aspx](http://www.mmpc.org/shared/tracers.aspx)

Problems and discussion questions will highlight key concepts. In addition to organized sessions, individual attendees will have ample opportunities for personal interaction with faculty members in the form of one-on-one mentoring sessions to discuss their research projects in more depth.

This course is supported by the Mouse Metabolic Phenotyping Centers.
Monday, November 16, 2015
Basic characteristics of radioactive, stable isotope tracers.
General principles of mass spectrometry.
Isotopic enrichment using GC-MS, LC-MS.
Methods of mass spectrometry analysis.
Measurement of specific activity.

Tuesday, November 17, 2015
Tracer kinetics (single pool models).
Oxidation and synthesis rates.
Glucose metabolism (clamp studies).
Lipid metabolism (basic kinetics).

Wednesday, November 18, 2015
Pathway fluxes using NMR isotopomer analysis.
Methods in protein metabolism.

Thursday, November 19, 2015
Energy expenditure with doubly labeled water.
Synthesis rates with deuterated water: proteins, fatty acids sterols, glucose, nucleic acids.
Mass isotopomer distribution analysis: polymer synthesis, multiple flux pathways, TCA cycle, anaplerosis.

Friday, November 20, 2015
Pathway discovery via association of isotopomer analysis and metabolomics.
Inherently difficult problems.

LOGISTICS

Wyndham Hotel (also where the course takes place)
1260 Euclid Avenue
Cleveland, OHIO 44115
1 (216) 615-7500
www.wyndham.com/hotels/ohio/cleveland/wyndham-cleveland-at-playhousesquare/hotel-overview

The Cleveland Hopkins Int’l Airport is only within 20 minutes from the Wyndham Hotel by public transit.
www.clevelandairport.com/Transportation/Public-Transit.aspx

COURSE REGISTRATION & MATERIAL

• Registration opens on June 1,2015
• Registration is available online or via the attached form. Registration Is limited to 100 participants
• To register online please go to https://www.mmpc.org/shared/tracers

• Course registration deadline: Mon Oct 26, 2015
• Please refer to 'Registration Form' for list of fees.
• Registration fee includes:
  ~ breakfast, lunch and snacks (Nov 16 - 20)
• Please bring a Wi-Fi enable device to download and view all course material.

NOTE: The following book is also very useful

ACCOMMODATIONS & INFORMATION

To book a room at the discount rate, please call 1 (866) 270-6768 and mention the identifier:
8th Annual MMPC Course + Dates of course

Reservations must be made on or before 10/26/2015

REGISTRATION FORM

The course is limited to 100 participants

Name: ___________________________ ___________________________ ___________________________
Last First Degree
Institution: ___________________________
Position: ___________________________
Mailing Address: ___________________________
City: ___________________________ State: ___________ ZIP: ___________________________
Email: ___________________________
Tel #: ___________________________

Experience with Isotopic Tracers:
__________________________________________________________

Topic(s) I wish to learn about:
__________________________________________________________

Special Dietary or Accessiblity needs:
__________________________________________________________

REGISTRATION FEES

Student / Post-Doc ($450)
Academic / Gov. Scientist ($800)
Industry Scientist ($1,300)
Payable by personal, company or institutional check
ONLY by Monday October 26, 2015

Please Make Check Payable To:
Case Western Reserve University
Ref.: 8th Annual MMPC Course

Mail To: Case Western Reserve University
Department of Nutrition - School of Medicine
10900 Euclid Avenue - WG48
Cleveland, OH 44106-4954 (USA)